Automated Lubrication System

Installation/Operator Instructions

Case 4430 Patriot Sprayer

Kit Part Number: 73341658

Rev. 2, 11/12, CWA

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Introduction

Thank you for purchasing the Quicklub® On Board Grease System for your Case Sprayer. The system has been designed to increase the component life and overall productivity of your equipment, while reducing labor costs related to the traditional method of point-by-point manual lubrication.

The system consists of the Quicklub® progressive metering valves that positively displace and meter precise amounts up to N.L.G.I. #2 shop grease down to -13°F temperature. Grease is distributed to each connected point through high-pressure tube and hose.

This Quicklub® kit is designed to work with your Case Sprayer. This is a fully automated lubrication system utilizing a 12 volt DC heavy duty electric pump with integrated timer that dispenses lubricant to the progressive metering valves at timed intervals. The lubricant is pumped to the primary metering valve, which distributes it to secondary metering valves in specific zones of service. The secondary metering valves deliver measured amounts of lubricant proportional to each lube point in its zone.

The components are connected with lengths of high-pressure hose and tubing that are included in the kit. Contents of the kit are specifically marked to coincide with this instruction manual to achieve a consistent and quality installation.

This manual has been included with the system as an easy-to-follow guide for installation and operation. Keep it with the equipment, as it is also a trouble-shooting manual to keep your automated lubrication system working properly.

This kit also contains Installation and Operation Instructions for the 203 series system supply pump. Please refer to this manual for detailed information on operations, maintenance, trouble shooting and technical data. If missing, please contact Lincoln and request service page form #403439.Durable and reliable, the Quicklub® On Board Grease System has been carefully designed using industry proven products to provide long and trouble-free life under the most severe farming conditions.

For further information on this system please contact Lincoln Technical Services at 1-314-679-4200 ext. 4782# or fax 1-314-679-4357.

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Preparation/Installation Overview

The following steps will assist the installer with a systematic approach for installing the Quicklub Automated lube system on the Case Sprayer. By following the steps outlined, a successful installation will be achieved and will increase the service life of all pins and bearings connected to the lube system.

Preparation

- Compare the bill of material with the kit contents
- Clean machine thoroughly
- Survey the equipment and locate all lubrication points to be serviced by the lubrication system
- Lubricate each point with a grease gun prior to removing grease fittings to assure grease acceptance. Any points that will not accept grease must be repaired prior to system installation.
- After confirming all points will accept grease, remove all grease fittings.

Installation Overview

- Install appropriate adapters and tube fittings in lube points.
- Position valve mounting brackets on machine.
- Attach metering valves to previously mounted brackets.
- Using tubing cutters, cut to length individual tubing feed lines from secondary valves to lube points and make connections.
- When installing feed line tubing into the Quicklinc fittings, push until firmly seated.
- Neatly bundle, loom with spiral wrap provided and tie strap feed lines wherever possible to protect from abrasion.
- Size, cut and attach appropriate hose ends to all supply lines. The high-pressure hose is used as supply lines from the pump to the primary valve and the primary to the secondary valves. It is recommended that the supply lines be routed and cut only after all valves and the electric pump have been attached to the machine. This assures the supply line is cut to the proper length. Also, allow for unrestricted movement while the machine is in motion.
- Route supply lines from the pump to primary valve and from the primary valve to the secondary valves and make connections.
- Secure supply/feed lines with tie straps, so not in harms way.
- Mount pump and make electrical connections (electrical diagram included with the pump).

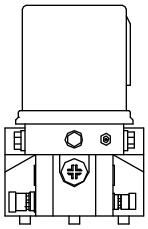
Bill of Material

Part #	Desc	Qty
Pump		
94012	Pump	1
Valves/Acc		
619-26648-2	SSV 12	1
619-27122-1	SSV 6	2
619-26646-2	SSV 8	1
619-28899-1	SSV 14	3
242125	Zerk Cap	7
700506	High Pressure Zerk	7
246416	Valve Bracket	7
51304	Valve Mounting Nut	14
247023	Valve Mounting Bolt	14
276407	1/8" Tee	7
226-14091-2	Tube Valve Outlet	60
272658	Hose Valve Outlet	6
303-17499-3	Valve Plug	7
Hose/Fit		
241288	Hose 40'	4
246002	1/8" Swivel Hose Fitting	8
272427	Hose collar	6
272401	Hose Standpipe Straight	6
Tube/Fit		
504-36041-2	6mm Grease Filled Tubing	213
226-13752-7	Quicklinc M8x1 Straight	14
432-24043-1	M8x1 90 Deg Adapter	2
226-13753-8	Quicklinc M8x1 90 Rigid	38
226-13756-4	Quicklinc M8x1 90 Swivel	8
Accessories		
241110	Spiral Wrap 10'	15
241054	Zip Ties (100)	8

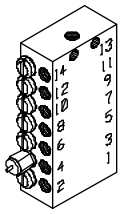
Component Appendix

QUICKLUB COMPONENT GLOSSARY

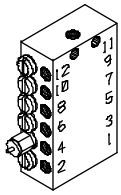
PART NUMBER (LINCOLN) and DESCRIPTION



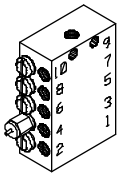
94012 - 203 2 Liter Pump, 12 Volt / 3.5 Amps...



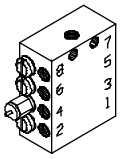
619-28899-1 - Divider valve SSV14 with indicator pin and 14 port outlets.



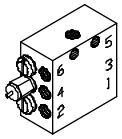
619-26648-2 - Divider valve SSV12 with 12 port outlets and Indicator Pin.



619-26845-2 - Divider valve SSV10 with 10 port outlets and Indicator Pin.



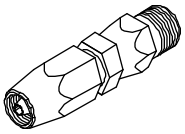
619-26646-2 - Divider valve SSV8K with 8 port outlets and Indicator Pin.



619-27122-1 - Divider valve SSV6 with indicator and 6 port outlets.

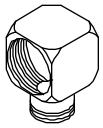
QUICKLUB COMPONENT GLOSSARY

PART NUMBER (LINCOLN) and DESCRIPTION



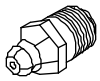
246002 - 1/8" NPT field installable hose coupling.

272658 - VALVE, OUTLET FITTING.

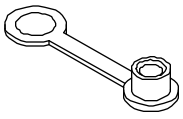


432-24043-1 - 1/8" NPT 90° Adapter.

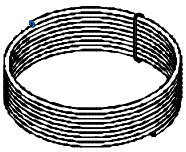
303-17499-3 - Valve closure plug for Black divider valves.



700506 - Straight leak-proof grease fitting.



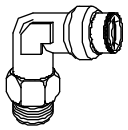
242125 - Plastic Grease fitting cap.



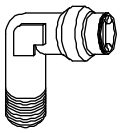
504-36041-2 - 6mm" Grease filled Nylon Tubing (in Meters).

QUICKLUB COMPONENT GLOSSARY

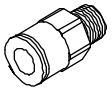
PART NUMBER (LINCOLN) and DESCRIPTION



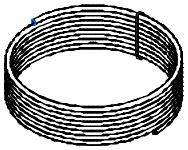
226-13756-4 - 6mm Tube by M8x1 90° Swivel quicklinc fitting.



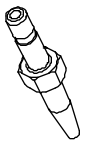
226-13753-8 - 6mm Tube by M8x1 90° Rigid Quicklinc Fitting



226-13752-7 - 6mm Tube by M8x1 Straight Quicklinc Fitting



241288 - 1/8" Grease filled high pressure hose (40 ft. coil).

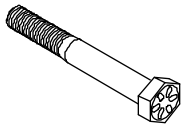


272401 - HOSE STUD, STRAIGHT.

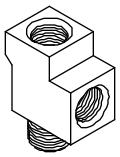
272427 - THREADED SLEEVE.

QUICKLUB COMPONENT GLOSSARY

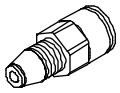
PART NUMBER (LINCOLN) and DESCRIPTION



247023 - Grade 8 - 1/4" valve mounting bolt.

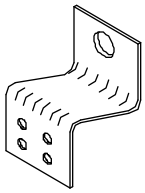


276407 - Male run tee...



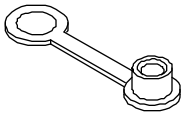
226-14091-2 - 6mm tube Quicklinc valve outlet fitting...

303-17499-3 - Valve closure plug for Black divider valves...

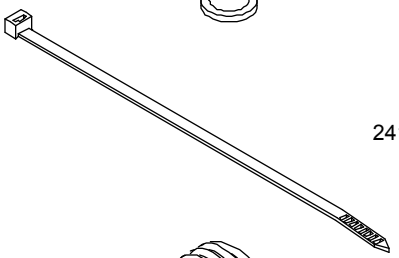


246416 - Valve mounting bracket...

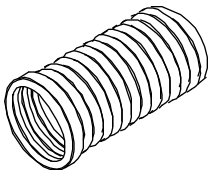
51304 - 1/4" Nylon locknut for valve mounting...



242125 - Plastic Grease fitting cap...



241054 - Nylon Ties (100 count poly bag) 7" Length...



241120 - Feed Line Bundling Spiral Wrap (20ft.) ...

System Operation

The key components of the Quicklub system are:

1. **Pump** with **Integrated Timer**
2. Divider valve network consisting of a Primary Valve and Secondary Valves with attached **Cycle Indicator Pin**.

3. A lubrication event is initiated by actuating the pump via the **Integrated Timer** based on a preset “pause time” or time between lubrication events.

4. The **Pump** dispenses lubricant to the primary divider valve

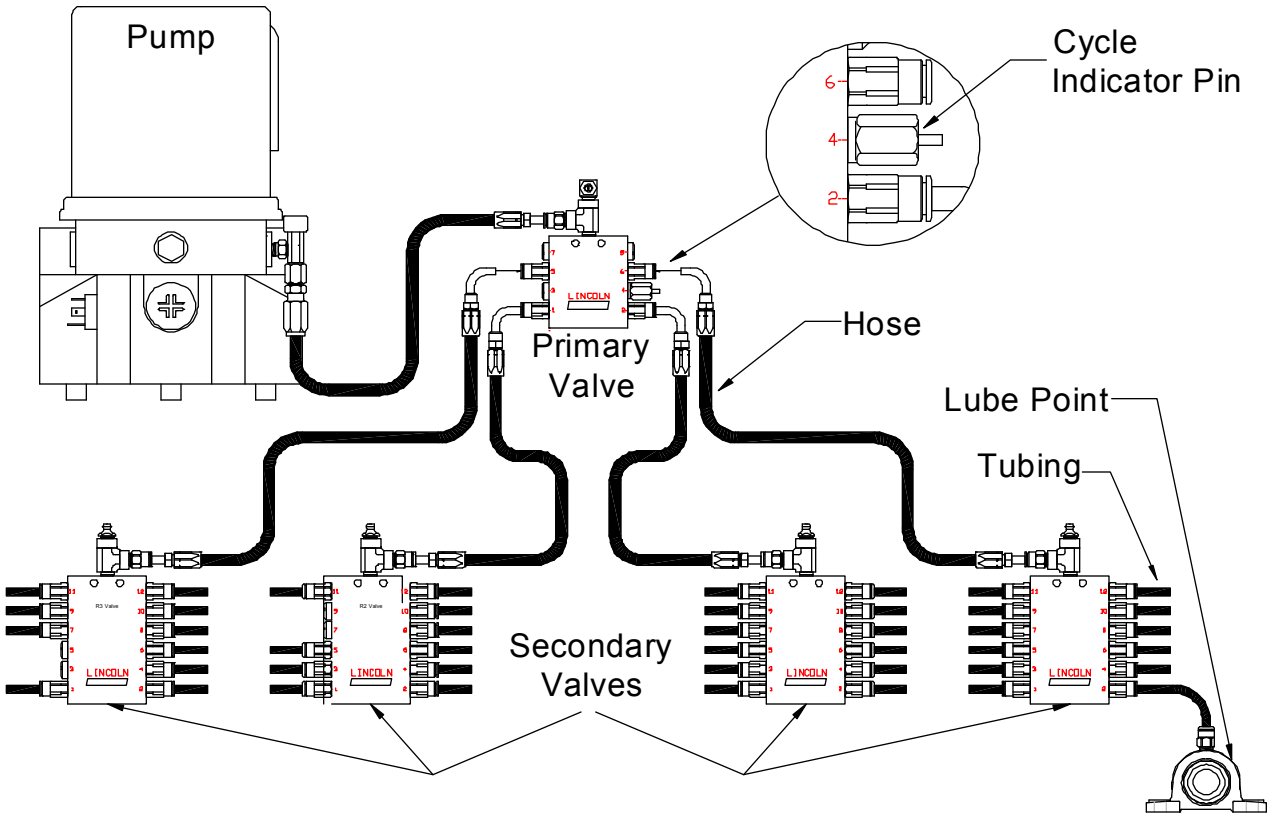
5. The **Primary Valve** distributes the lubricant to the secondary valves

6. The **Secondary Valves** distribute and dispense lubricant to the lubrication points.

7. Lubricant flow through the divider valves actuates the Cycle Indicator Pin for a visual inspection pf proper operation.

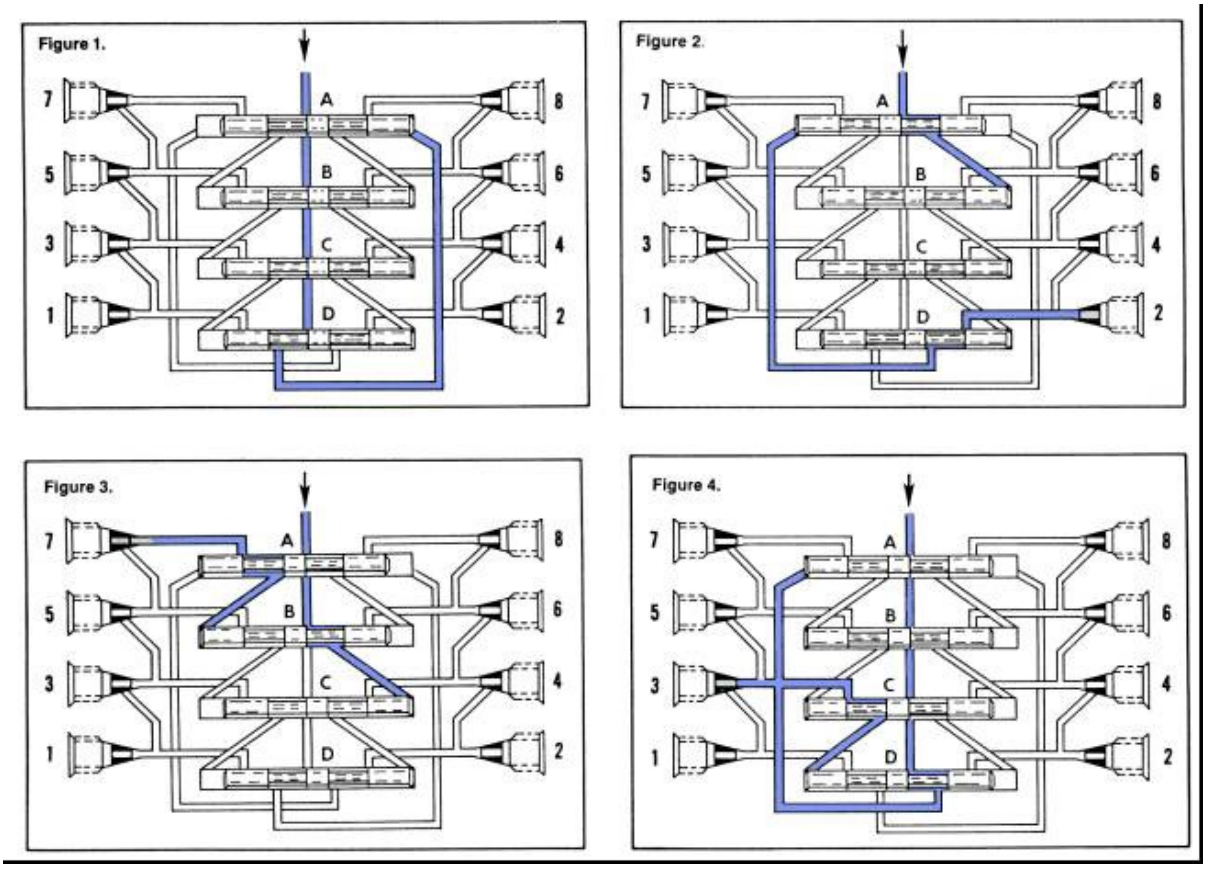
The pump will run for the preset On-Time

8. The controller now begins countdown for the next lubrication event.



Divider Valve Operation

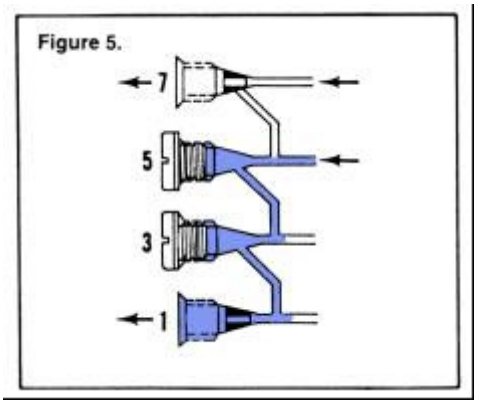
At the heart of every Quicklub System is the metering valve or progressive distributor block, designed to positively meter the input of lubricant (oil up to NLGI #2 greases) out to the connected number of lubrication points irrespective of distance and back pressure. The inlet passageway is connected to all piston chambers at all times with only one piston free to move at any one time.



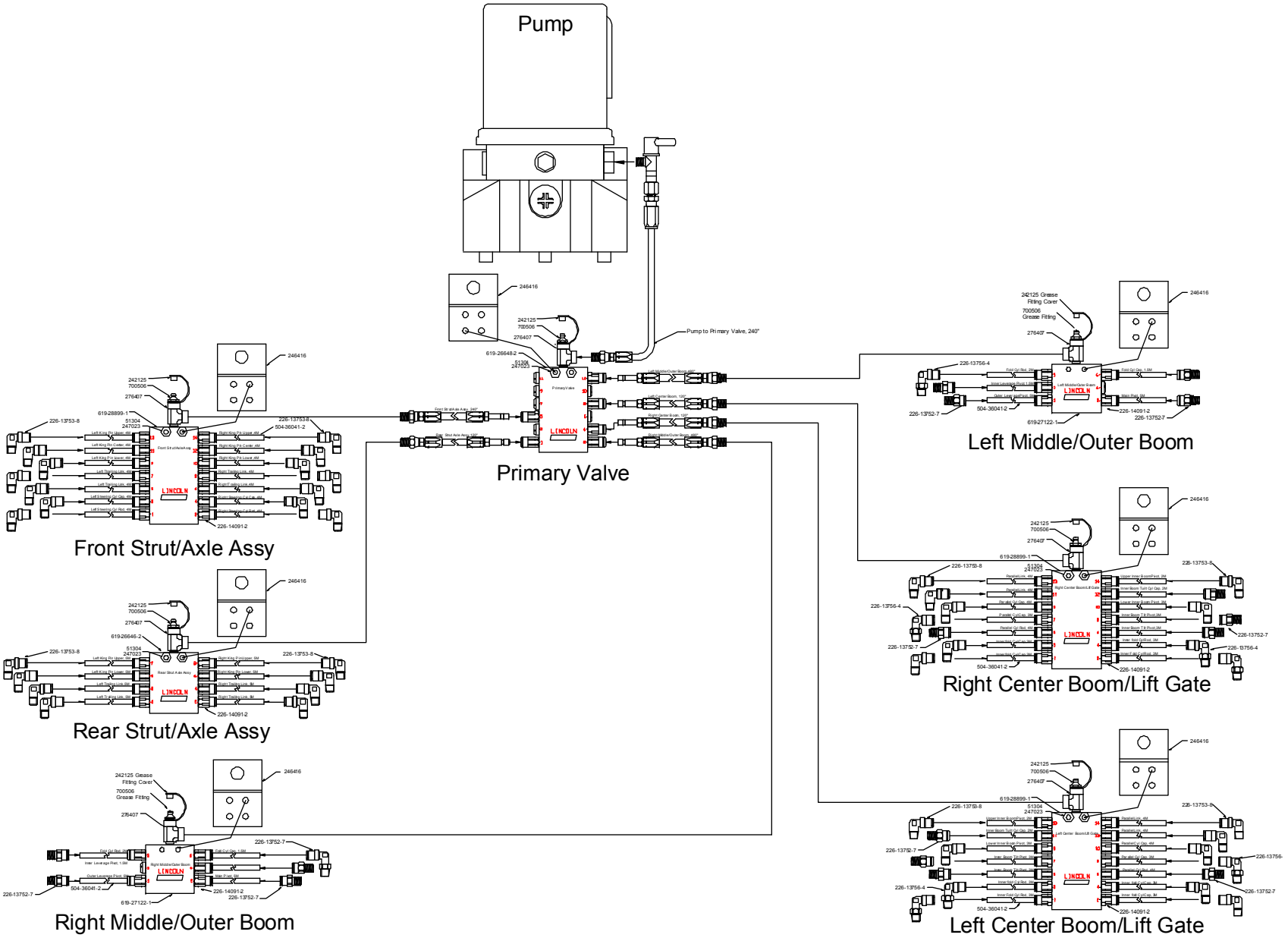
- With all pistons at the far right, lubricant from the inlet flows against the right end of piston A (fig. 1).
- Lubricant flow shifts piston A from right to left, dispensing piston A output through connecting passages to outlet 2. Piston A shift directs flow against right side of piston B (fig. 2).
- Lubricant flow shifts piston B from right to left, dispensing piston B output through valve ports of piston A and through outlet 7 (fig. 3).
- Lubricant flow shifts piston C from right to left dispensing piston C output through valve ports of piston B and through outlet 5.
- Piston C shift directs lubricant flow against right side of piston D (not illus.)
- Lubricant flow shifts piston D from right to left, dispensing piston D output through valve ports of piston C and through outlet 3.
- Piston D shift directs lubricant through connecting passage to the left side of piston A (fig. 4).
- Lubricant flow against left side of piston A begins the second half cycle which shifts pistons from left to right, dispensing lubricant through outlets 1, 8, 6 and 4 of the divider valve.

Cross-porting (Divider Valve)
Installing a closure plug in one or more outlets may combine outputs from adjacent outlets. Lubricant from a plugged outlet is redirected to the next adjacent outlet in descending numerical order. **Outlets 1 and 2 must not be plugged since they have no cross-port passage to the next adjacent outlet.**

In figure 5 outlets 5 and 3 are cross-ported and directed through outlet 1. In this example, outlet 1 will dispense three times as much lubricant as outlet 7. The tube ferrules in outlets 1 and 7 block the cross-port passage so that lubricant flow is directed through the outlets.



System Schematic (Overview)



Lubrication Point Overview

The Lincoln Quicklub Lubrication System automatically lubricates 60 lube points on the Case Sprayer:

Chassis

Qty	Description
8	Trailing Links
10	King Pins
4	Steering Cylinders

Lift Gate

Qty	Description
4	Parallel Links
4	Parallel Link Cylinders

Boom

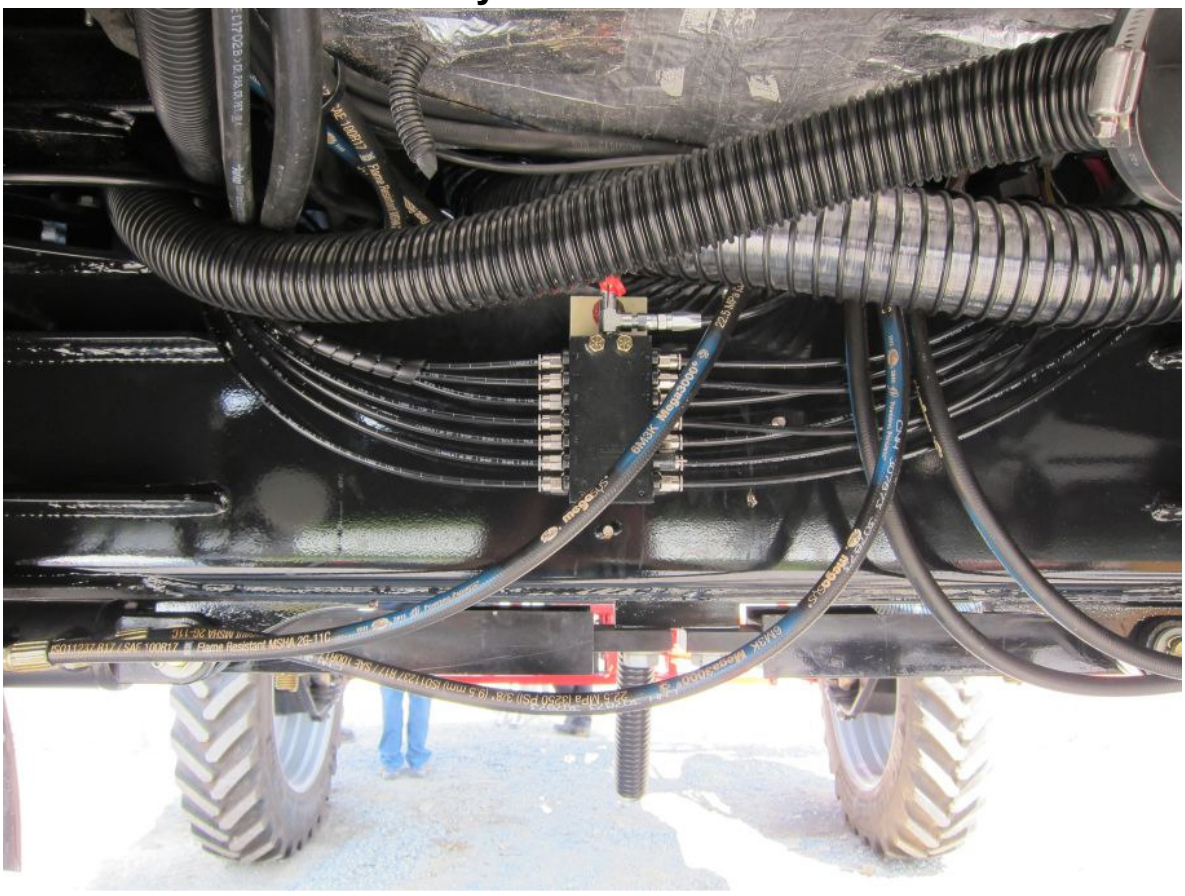
Inner Boom

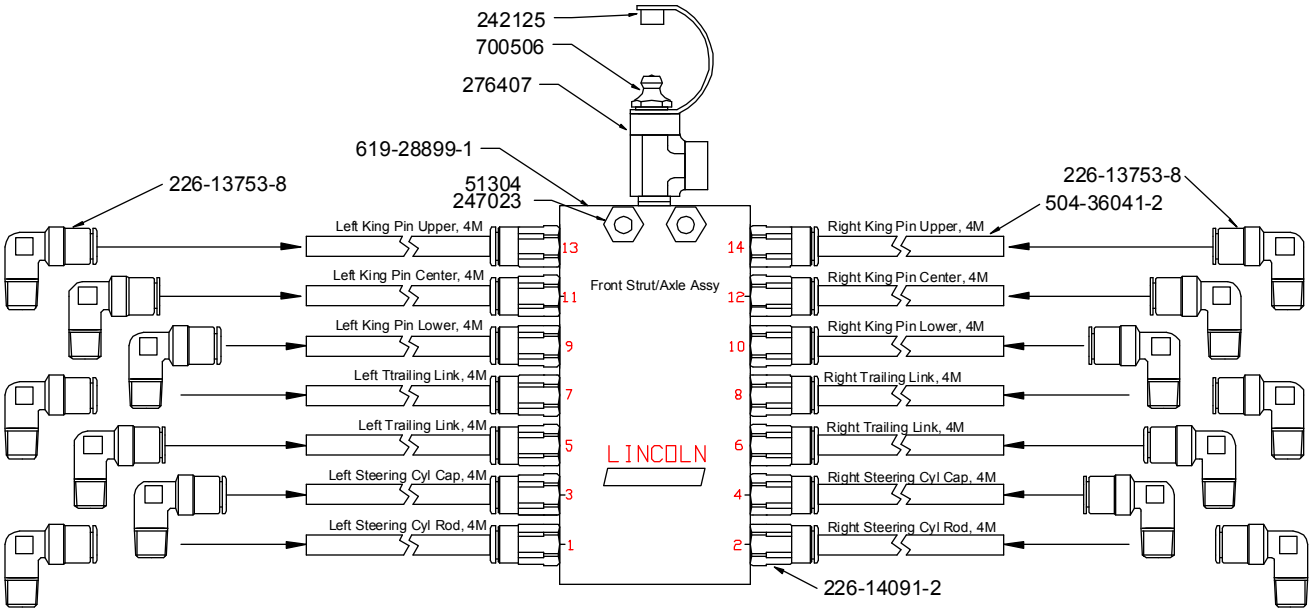
Qty	Description
2	Upper Inner Boom Pivot Points
2	Lower Inner Boom Pivot Points
4	Inner Boom Tilt Pivot Points
4	Inner Fold Cylinder Rod Ends
4	Inner Fold Cylinder Cap Ends
2	Inner Boom Tilt Cylinder Rod Ends
2	Inner Boom Tilt Cylinder Cap Ends

Outer Boom Hinge

Qty	Description
2	Main Pivot Points
2	Inner Leverage Points
2	Outer Leverage Points
2	Fold Cylinder Rod Ends
2	Fold Cylinder Cap Ends

Front Strut/Axle Valve Assembly and Feed Line Detail





Front Strut/Axle Lubrication Point Detail

Mount valve bracket to existing stud in the center of the cross member. .

Install #226-13753-8 into each Trailing Link port. Connect tubing and route to ports 5 and 7 on the left and ports 6 and 8 on the right.

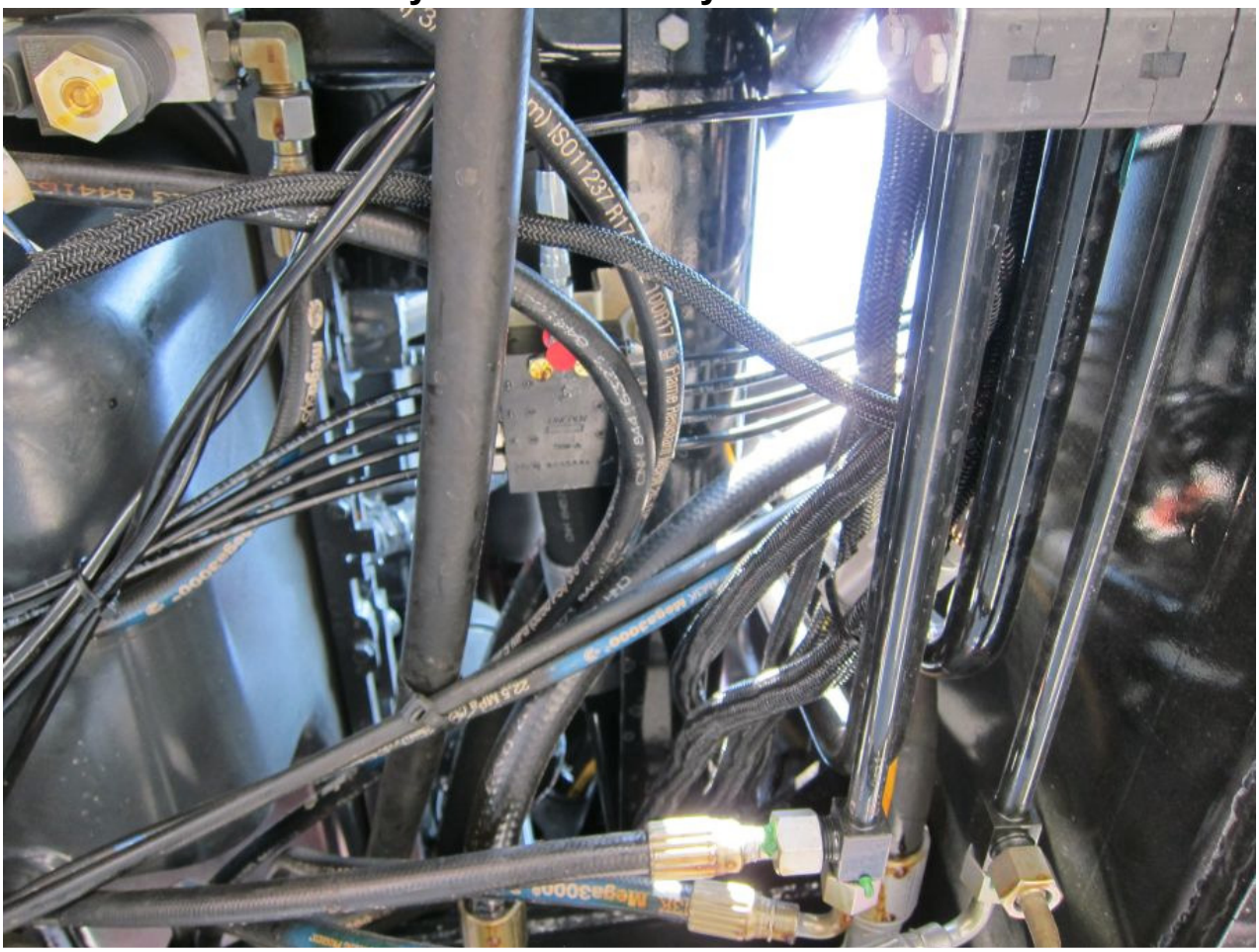
Install #226-13753-8 into each King Pin port. Connect tubing and route to ports 9, 11 and 13 on the left and ports 10, 12 and 14 on the right.

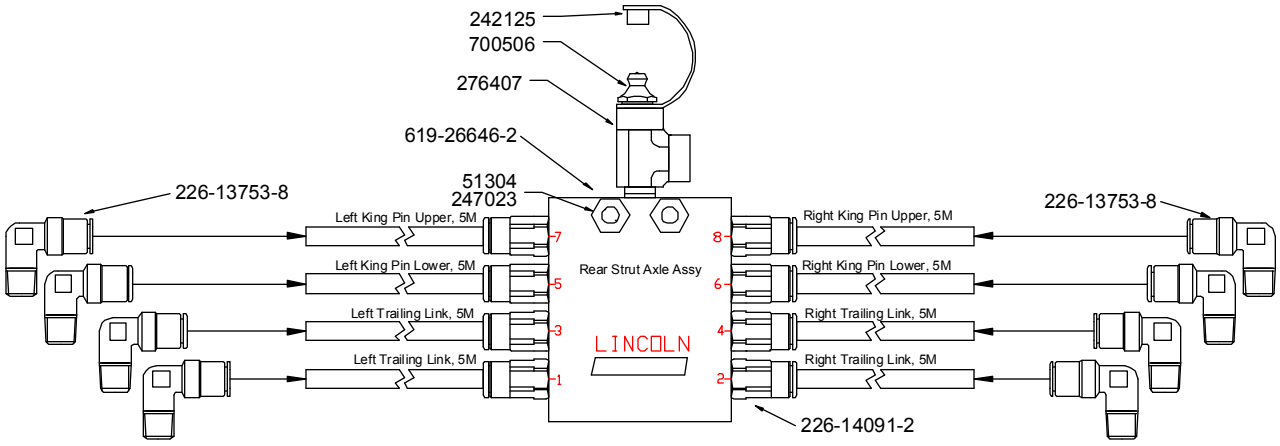
Route lines from Trailing Links and King Pins along with existing hydraulic lines.

Install #226-13753-8 into each Steering Cylinder Rod End port. Connect tubing and route to port 1 on the left and port 2 on the right.

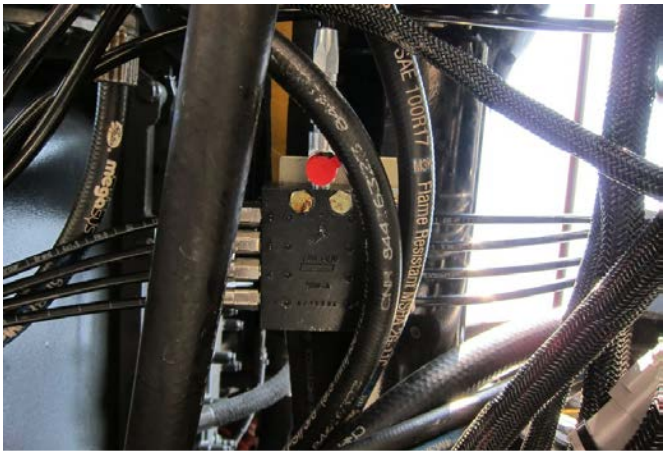
Install #226-13753-8 into each Steering Cylinder Cap End port. Connect tubing and route to port 3 on the left and port 4 on the right.

Rear Strut/Axle Secondary Valve Assembly and Feed Line Detail





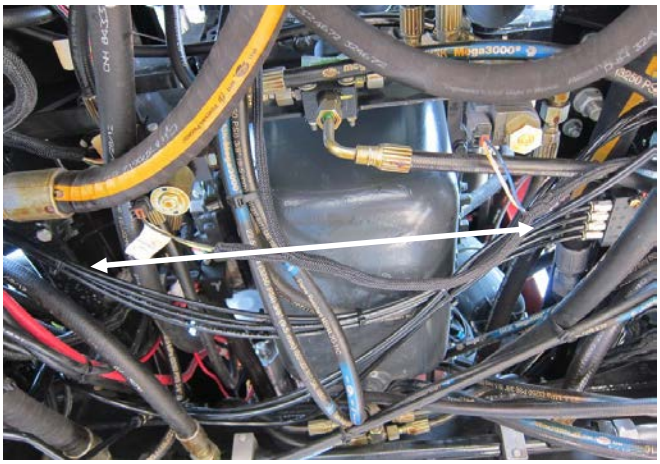
Rear Strut/Axle Lubrication Point Detail



Mount valve bracket to left side of frame using existing hole in frame.

Install #226-13753-8 into each Trailing Link port. Connect tubing and route to ports 1 and 3 on the left and ports 2 and 4 on the right.

Install #226-13753-8 into each King Pin port. Connect tubing and route to ports 5, and 7 on the left and ports 6, and 8 on the right.

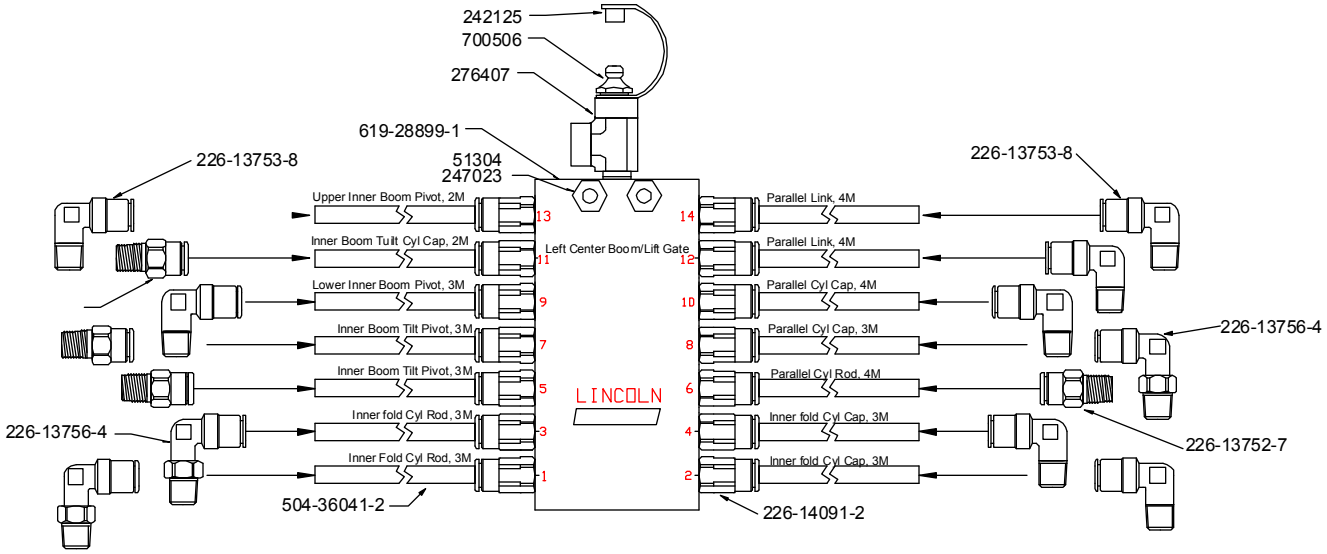


Route lines from valve under engine from left to right.

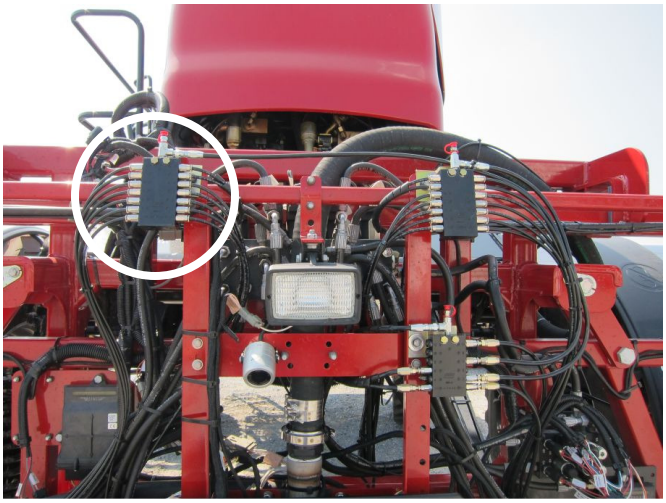
Route lines from Trailing Links and King Pins along with existing hydraulic lines.

Continue line routing along existing hoses.

Left Center Boom/Lift Gate Secondary Valve Assembly and Feed Line Detail

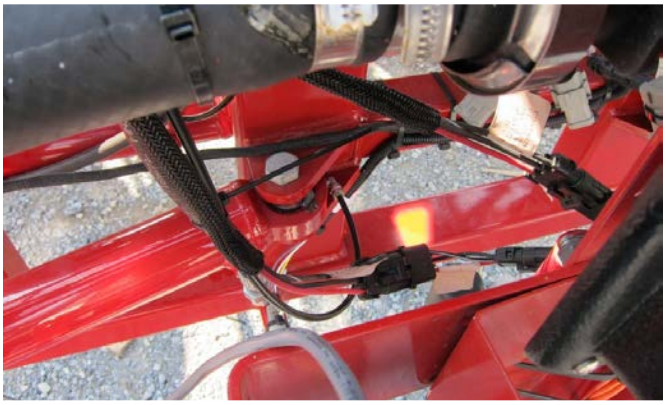


Left Center Boom/Lift Gate Lubrication Point Detail



Mount valve bracket to left side of Boom using existing clamp bolt.

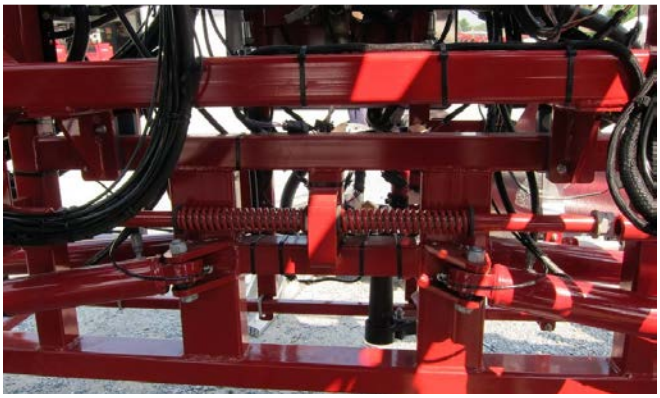
Install #226-13753-8 into Fold Cylinder Rod, and Upper Fold Pivot ports and 226-13752-7 into two Tilt Pivot Points. Route a group of 4 lines and connect to ports 3, 5, 7 and 9. Leave enough slack in the lines to accommodate for the folding of the Boom.



Install #226-13753-8 into Fold Cylinder Cap and route line from port 2.

Install #226-13753-8 into Upper Fold Pivot and 226-13752-7 into Tilt Cylinder Cap End. Route lines from ports 11 and 13.

Install #226-13752-7 into Tilt Cylinder Rod and route line from port 6 following existing lines across Boom Pivot..



Install #226-13753-8 into Fold Cylinder Cap and route line from port 4.

Left Center Boom/Lift Gate Lubrication Point Detail (Continued)

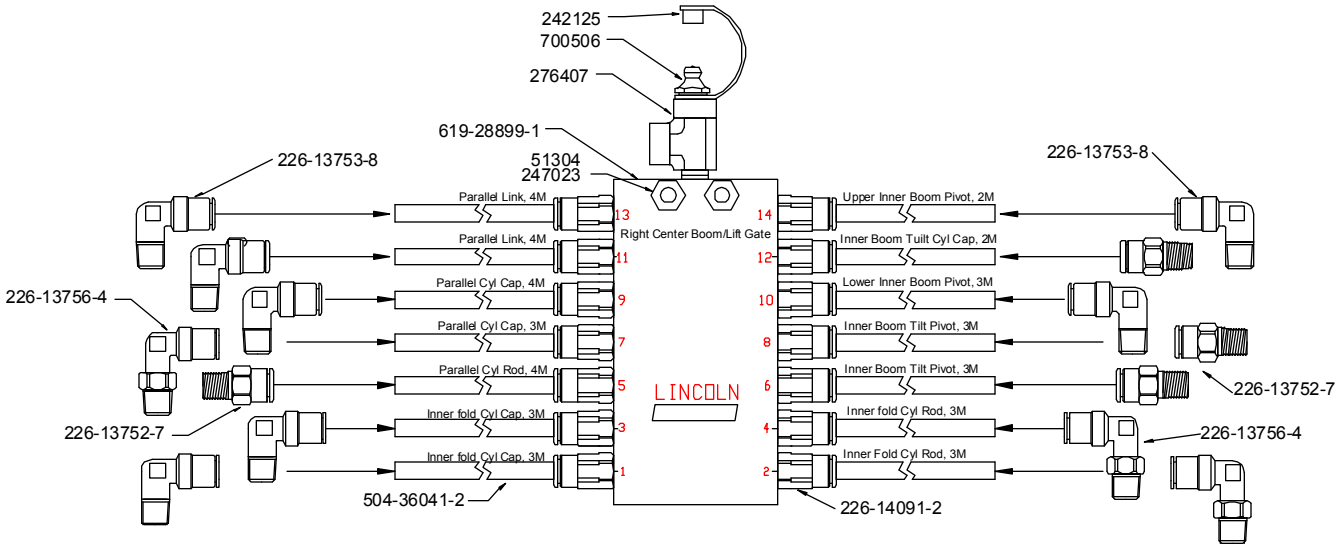
Route two lines together for the Lower Parallel Link and Parallel Link Cylinder Cap

Install #226-13753-8 into Lower Parallel Link port and connect line from outlet 12. Continue routing line up to Cylinder Cap.

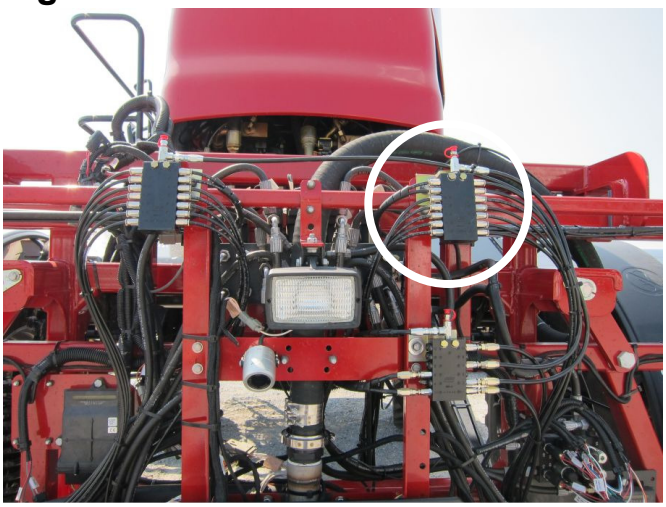
Install #226-13753-8 into Parallel Link Cylinder Cap port and connect line from outlet 10.

Install #226-13756-4 into Parallel Link Cylinder Rod port and connect line from outlet 8.

Right Center Boom/Lift Gate Secondary Valve Assembly and Feed Line Detail

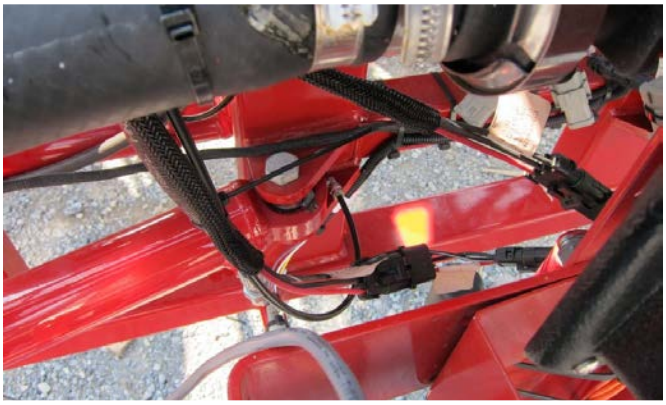


Right Center Boom/Lift Gate Lubrication Point Detail



Mount valve bracket to left side of Boom using existing clamp bolt.

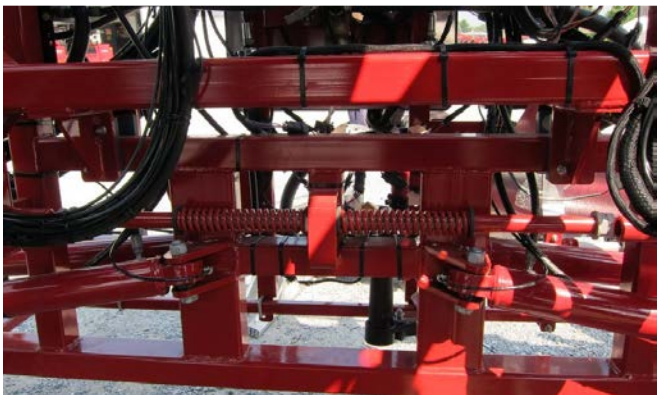
Install #226-13753-8 into Fold Cylinder Rod, and Upper Fold Pivot ports and 226-13752-7 into two Tilt Pivot Points. Route a group of 4 lines and connect to ports 4, 6, 8 and 10. Leave enough slack in the lines to accommodate for the folding of the Boom.



Install #226-13753-8 into Fold Cylinder Cap and route line from port 1.

Install #226-13753-8 into Upper Fold Pivot and 226-13752-7 into Tilt Cylinder Cap End. Route lines from ports 12 and 14.

Install #226-13752-7 into Tilt Cylinder Rod and route line from port 5 following existing lines across Boom Pivot..



Install #226-13753-8 into Fold Cylinder Cap and route line from port 3.

Right Center Boom/Lift Gate Lubrication Point Detail (Continued)

Route two lines together for the Lower Parallel Link and Parallel Link Cylinder Cap

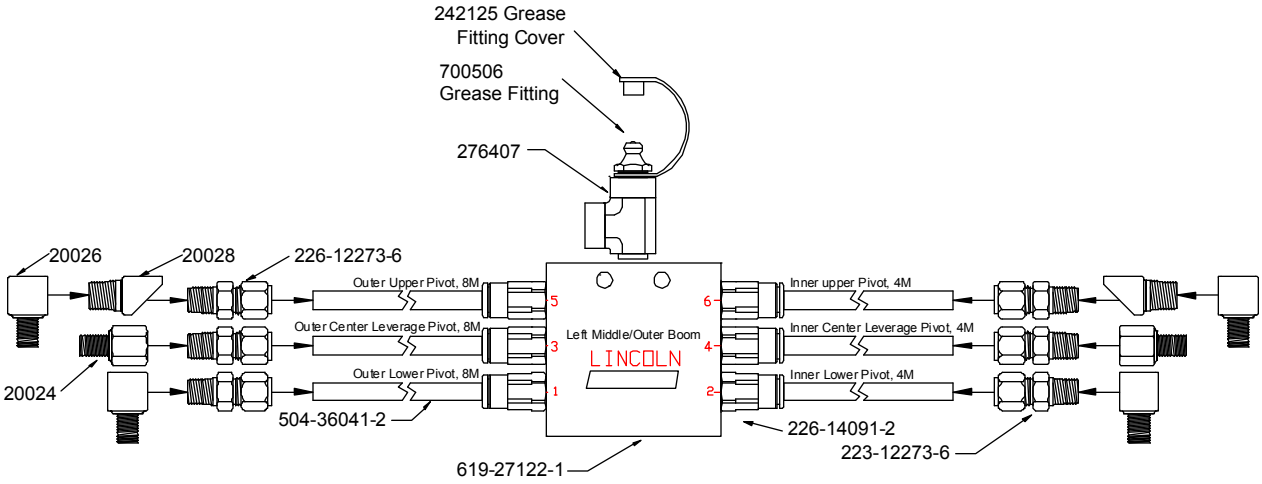
Install #226-13753-8 into Lower Parallel Link port and connect line from outlet 11. Continue routing line up to Cylinder Cap.

Install #226-13753-8 into Parallel Link Cylinder Cap port and connect line from outlet 9.

Install #226-13756-4 into Parallel Link Cylinder Rod port and connect line from outlet 7.

Install #226-13753-8 into Parallel Link Cylinder Rod port and connect line from outlet 13. Follow large hose up to lube port.

Left and Right Middle/Outer 120 Foot Boom Secondary Valve Assembly and Feed Line Detail



Important: Valve schematic above is set-up to lubricate the Lower Pivot Pins which require repositioning of the lube ports (see below). If the lower pivot points are not hooked up to the system, remove outlet fittings and install plugs in ports 3 and 4. Route lines from ports 1 and 2 to the Center Leverage Ports.

Do not plug valve outlet ports 1 or 2. This will lock up the entire system.

Left Middle/Outer 120 Foot Boom Lubrication Point Line Detail

Mount valve bracket to Boom using existing clamp bolt. Center the valve between

Install #20026 into Inner and Outer Pivot ports and a #20028 45 degree adapter into the #20026, followed by a #223-12273-6 into the #20028 and connect line from outlet 5 to the Outer Pivot and line from outlet 6 to the Inner Pivot Port.

Install #20024 into Inner and Outer Center Leverage Ports and #223-12273-6 into the #20024. And connect line from outlet 3 to the Outer Leverage and the line from outlet 4 to the Inner Leverage.

Route line through the center opening and secure to the rib with a zip tie to assure no rubbing will take place.

Continue routing around the radius of the pivot leaving some slack for folding.

Route lines with existing hoses across the fold and back to the valve.

Left Middle/Outer 120 Foot Boom Lubrication Point Line Detail

Note: The Inner and Outer Lower Pivot Points do not provide the needed clearance to install a fitting and lube line. The lube ports will need to be repositioned in order to connect to these points. This is an option, covered by the steps below.

Support the Boom and remove bolt (pin).

Locate new lube port position so the line will route away from the pivot point.

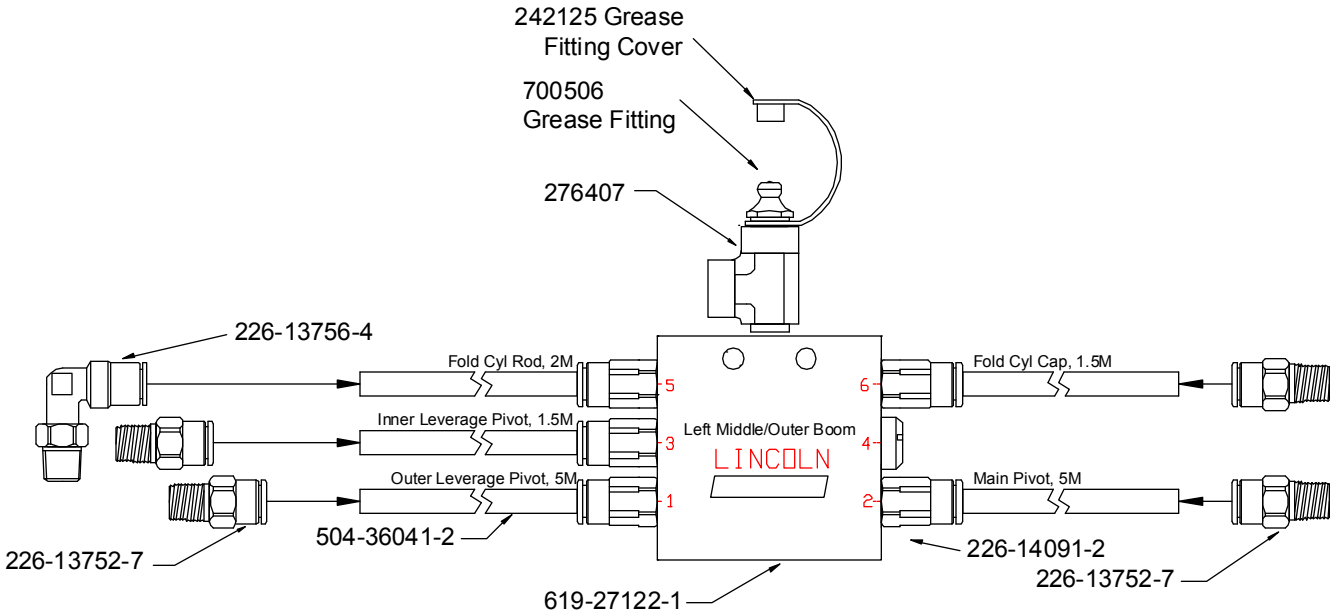
Drill hole for new lubricant port

Picture of new lubrication port.

Tap the new port to ¼-28 thread and clean out bushing of shavings.

Install 20026 in lube port and #223-12273-6 into 20026. Route line from Inner Lower Pivot to valve outlet 2 and Outer Lower Pivot to valve outlet 1.

Left Outer 90 and 100 Foot Boom Secondary Valve Assembly and Feed Line Detail



Left Outer 90 and 100 Foot Boom Lubrication Point Line Detail

Mount valve bracket to left side of Boom using existing clamp bolt.

Install #226-13753-8 into Fold Cylinder Cap port and connect line from outlet 6.

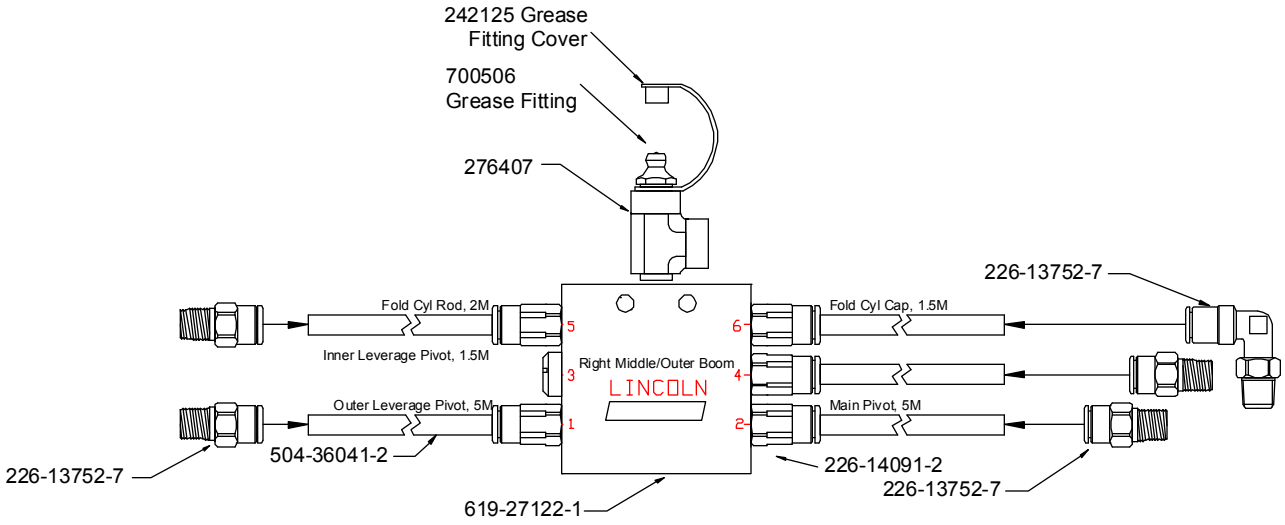
Install #226-13752-7 into Inner Leverage port and connect line from outlet 3.

Install #432-24043-1 into Fold Cylinder Rod port and #226-13756-4 into #432-24043-1 and connect line from outlet 5.

Install #226-13753-8 into Fold Pivot port and connect to outlet 2.

Install #226-13753-8 into Outer Leverage Pivot port and connect line from outlet 1.

Right Middle/Outer Boom Secondary Valve Assembly and Feed Line Detail



Right Middle/Outer Boom Lubrication Point Detail

Mount valve bracket to right side of Boom using existing clamp bolt.

Install #226-13753-8 into Fold Cylinder Cap port and connect line from outlet 5.

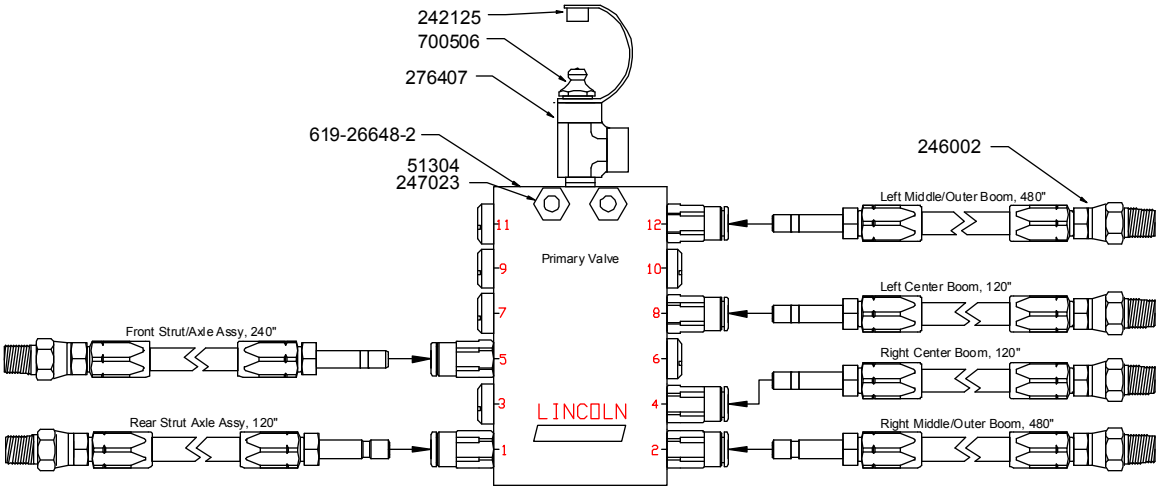
Install #226-13752-7 into Inner Leverage port and connect line from outlet 4.

Install #432-24043-1 into Fold Cylinder Rod port and #226-13756-4 into #432-24043-1 and connect line from outlet 6.

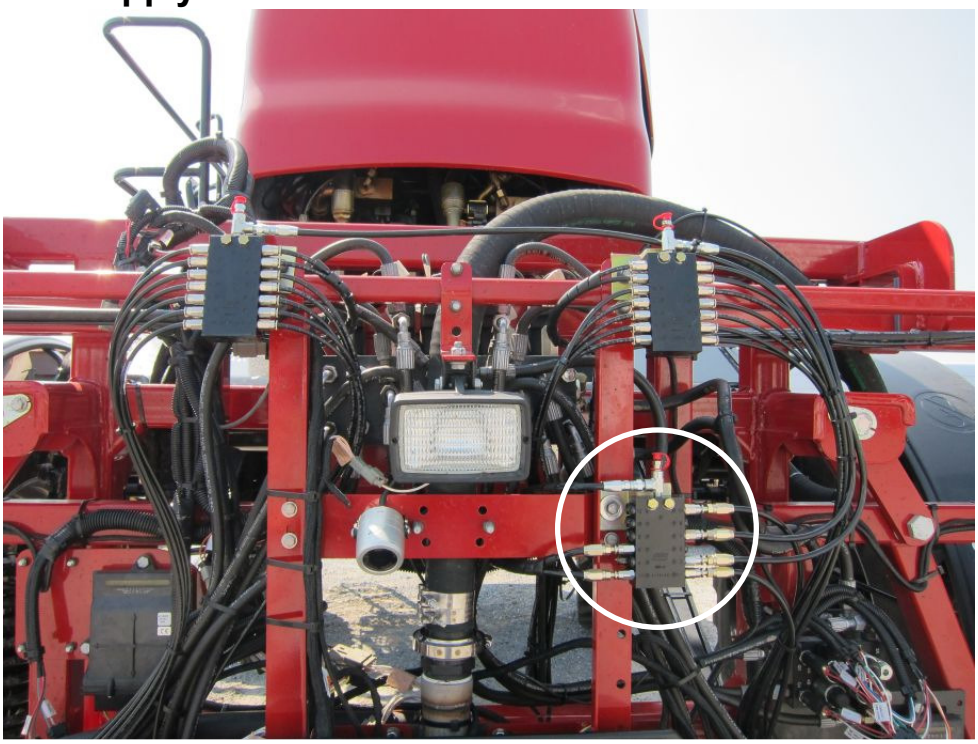
Install #226-13753-8 into Fold Pivot port and connect to outlet 1.

Install #226-13753-8 into Outer Leverage Pivot port and connect line from outlet 2.

Primary Valve Assembly and Supply Line Detail



Primary Valve Supply Line Detail



Mount primary valve to center boom, below the Right Inner Boom secondary valve, using existing mounting hole. Per the drawing on the previous page, run each supply line and the line to the pump following existing hose bundles. Once the hose is routed to the valve, cut to length and install #246002 to hose end. Install #246002 into the open Tee inlet on each valve.

Pump Mounting Detail

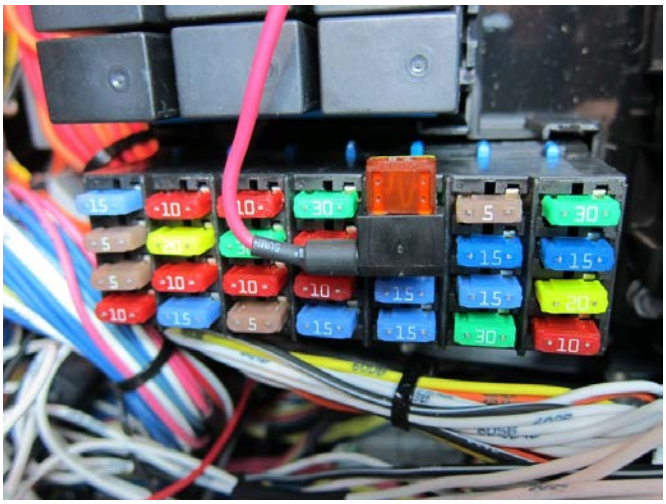
Mount the pump/mounting plate on the left side of the sprayer directly to the Tool Box. Use included template for proper hole alignment. (Picture also shows the electrical wiring harness running into the left side of the pump. The relief valve/supply line is attaché to the right side of the pump.

Close-up of pump mounting. Route the electrical line up and along existing lines where possible.

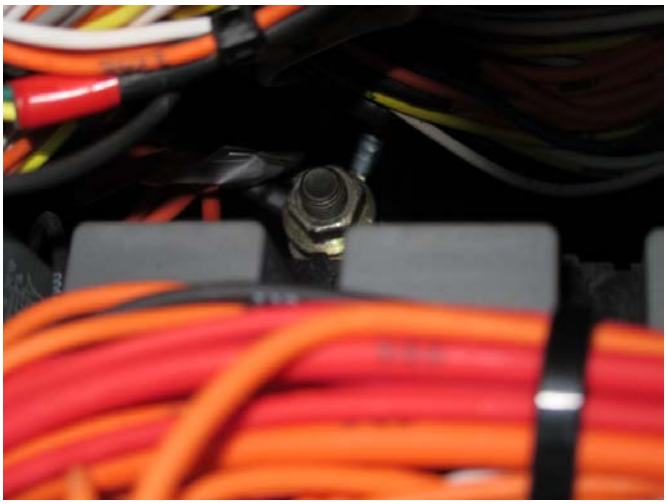
Pump Wiring Detail

Continue routing electrical into the cab via the access panel.

Pull harness through the bottom of the cab and route to fuse panel on left side of machine underneath the passenger seat.



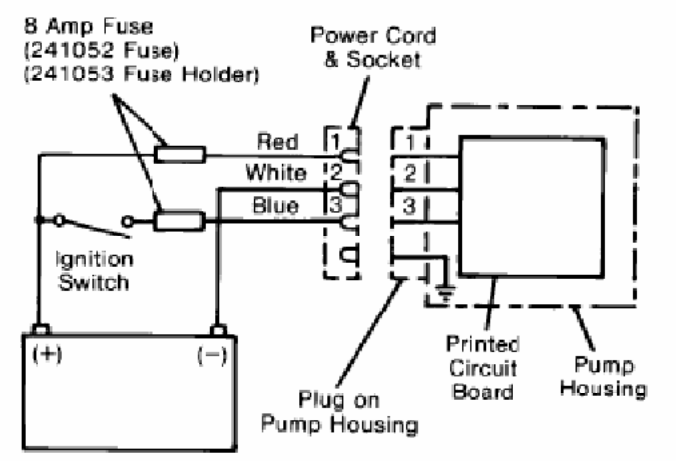
Combine red and blue wires from the harness and connect to the seat fuse via an “add a circuit” or similar device. Fuse the pump for 7.5 amps.



Connect white wire from the harness to the ground lug inside the fuse box. The lug is located on the bottom of the box.

ELECTRICAL CONNECTIONS

Connect black power cord as follows:
Red wire connects to 8amp fuse then to battery (+) hot.
White wire connects to battery (-) ground.
Blue wire connects to 8 amp fuse, to ignition switch, then to battery (+) switched.

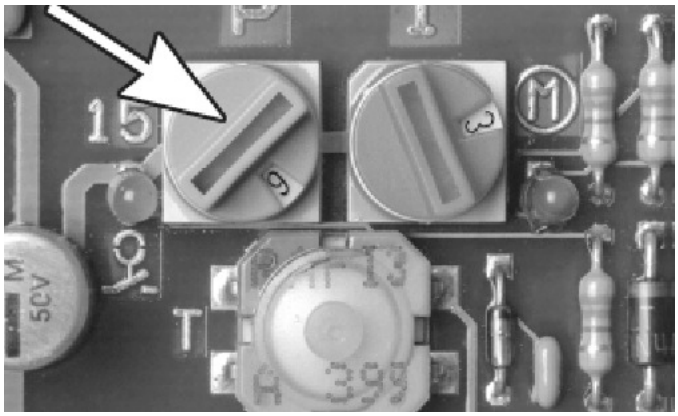


OPERATION

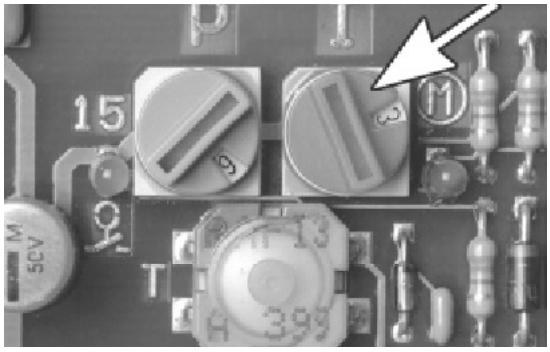
- The off timer begins accumulating time when the ignition switch closes. When the off timer reaches the preset value the pump will turn on. The pump remains activated for the period of time that is preset on the ON timer.
- Remove Access Sealing Plug on front of pump to access manual lube switch, timer adjustments or to view the system LED's.
- When switching off the ignition voltage and/or the operating voltage the time already used is saved for an unlimited duration.
- When the power supply is switched on again the printed circuit board continues to operate from the point where it had been interrupted.

Timer Settings and Adjustment

Remove cover to access the timer.



The Pause time is set by the blue rotary switch



The pump on-time is set by the red rotary switch

Timer Operation
1. The LED marked “battery” lights when power is applied to the PC board.
2. The LED marked “motor” lights when pumping lubricant.
3. Depressing pushbutton for **2 seconds** will initiate a manual lube event.
4. Off timer rotary switch, can be adjusted to 15 values, (do not set to “0”)
5. On time rotary switch, can be adjusted to 15 values, (do not use “0”)

IMPORTANT: Do not use the zero position located on the ON or Off timer switch.

Rotary Switch Values

Switch Position	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Pause Time (Hours)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Switch Position	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
On-Time (Minutes)	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30

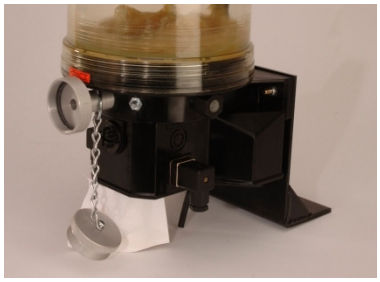
Timer Setting

For the Case Sprayer, set the **Pause Time** for one hour (switch position “1”) and the **On-Time** for 6 minutes (Switch Position 3)

Quick-Fill Adapter Installation and Operation

The Quick-Fill adapter is a device which replaces the standard grease fitting fill port with a high-flow port for use with a standard grease gun.

Step 1: To install the quick-fill adapter, remove the standard fill port located in the front of the pump.



Step 2: Insert the Quick-Fill adapter into the fill port. Hand tighten only.

Step 3: To fill the reservoir, remove the grease gun's pump head assembly from the container tube (Standard procedure used to install a lubricant cartridge).

Step 4: Insert a new cartridge of grease into the grease gun's container tube and assemble into the quick-fill adapter.

Step 5: Unlock the follower handle making sure the handle is engaged with the follower. Push the follower rod handle into the container. This action will dispense the entire cartridge of grease into the reservoir. Repeat until the reservoir is full. Replace quick-fill cap.

System Start-up

The following checklist has been developed as an aid in verifying proper installation and operation of the Quicklub® Onboard Grease System. By completing the steps outlined below, the operational readiness of the system and resulting extension of the component life of all points connected to the system will be insured.

- Apply grease gun (manual or pneumatic) to the grease fitting located on the Primary valve and each secondary valve inlet. While pumping grease through the system, cycle the indicator pin on the primary metering valve a minimum of 15 times. NOTE: Grease gun nozzle and grease fitting should be thoroughly cleaned before lubricating to prevent flow of contaminants into the lube system.
- Inspect primary valve supply and outlets for grease discharge. If leakage is detected, tighten the fittings.
- Continue to cycle the system until fresh grease appears at each lube point.
- Inspect each lube point fitting for leaks. Correct any leaks by firmly pushing tube into the fitting until seating occurs, or tighten the threaded fittings for components connected with hose.
- Operate the equipment through its complete range of motion, inspecting for unrestricted movement of tube and hose. Correct any problems of rubbing, chaffing or kinking.
- Inspect all hose and tube that is not covered with some type of protective wrap. Wrap any tube or hose that would be susceptible to damage from rubbing or chaffing.
- Inspect all hose and tube connected to moving components. Insure that adequate hose or tube is provided to allow unrestricted movement to these moving lube points.
- Verify proper pump operation and verify time setting by activating pump with the green activation button located on the face of the pump control panel. Activate the pump at least three times to insure proper operation.
- After the Baler is in operation for a period of time (approx. 80 hours), you may find you need to adjust timing to a shorter or longer period based on the operating conditions.
- Fill the reservoir with selected grease by filling at the grease fitting located on the face of the pump reservoir.

Daily Walk-Around Inspection

The Lincoln Industrial Quicklub automated lube system components are designed, engineered, manufactured and assembled to the highest quality standards. This lube system requires little maintenance, however, to ensure maximum reliability and to realize maximum service life of all components, it is highly recommended that a daily walk-around inspection be performed.

The daily walk-around inspection should include the following:

NOTE: Operator to confirm operation of electric pump while machine is in service.

- Observe lubricant level in reservoir. Fill reservoir if it is low.
- Inspect the relief valve for excess purge of grease. Refer to the trouble shooting guide on next page.
- Inspect all valves and lube point connections to verify that no leaks are occurring.
- Inspect supply/feed lines to insure that no breaks or leaks have occurred.
- Inspect lube points so that all lube points have a “fresh grease appearance.”

Troubleshooting

Locating Blockage in Lincoln Quicklub Systems

Description
In a Lincoln Quicklub Lubrication System, free flow of lubricant from the pump through the transmission system and the bearings is necessary. If any portion of this transmission system (a divider valve, line fitting or any bearing) does not freely accept and pass its portion of the lubricant a blockage has occurred. This blockage will cause a higher than normal pumping pressure to be developed by the pump. Depending on the application or system design, this blockage with its resultant high pump pressure will usually cause a complete loss of lubricant flow into the total system and no bearing will be receiving lubricant. The loss of flow due to a blockage is first indicated with the higher than normal system pressure that is developed by the pump as it attempts to overcome this blockage.

This abnormally higher pressure that is a result of a blockage is limited, isolated, and signaled through the use of various performance indicators, reset and relief, incorporated into the system design.

Divider Valve
A Quicklub divider valve is a proportioning device consisting of a minimum of three pistons. A primary divider valve is the first divider valve downstream from the lube pump. A secondary divider valve is any divider valve receiving lubricant from the primary divider valve.

Outlets
Each outlet on a Quicklub divider valve dispenses .012 in^3 per cycle. If an outlet is plugged, the lubricant will be diverted to the next outlet down allowing proper proportioning of lubricant to all lubrication points.

Warning —Never block lube outlets numbered one and two.

Locating Blockage
If a blockage exists in a Quicklub lubrication system it is caused by one of the following reasons:
(1) Crushed transmission line in the System.
(2) Blocked bearing in the system.
(3) Improperly drilled fitting in the system.
(4) Blocked divider valve in the system.

All servicing and disassembling should be carried out under the cleanest conditions possible. A blockage in a Quicklub system will be indicated by the fault light and by the pump element relief indicator, exhausting lubricant to atmosphere. Before proceeding as outlined, make a visual inspection of the system and check for crushed lines or improper divider valve installation. Verify that each divider valve outlet required to discharge lubricant can do so and that no plugs have been installed in an outlets one and two of any valve.

Use Filtered Lubricant Only.

Note: Dirt and foreign material are the worst enemies of any lubricating system.

Procedure

1. Use a manual pump with a gauge. Fill the pump with clean, filtered lubricant common to the system. Connect the manual pump into the inlet of the primary divider valve and slowly operate pump. If system will not cycle freely below 1,500 PSI, see Step 2.

2. With pressure on the primary as outlined in step 1, remove one at a time each supply line (if the supply lines cannot be removed, remove outlet fittings starting from the bottom and working towards the valve inlet) and attempt to operate manual pump after each line is removed. Do not exceed 2,000 PSI. If pressure drops and primary cycles freely after a line is removed then blockage is downstream in the area that is being served from that outlet. See Step 3. If all feed lines are removed and primary will not cycle, blockage is in this divider valve. Note: When a feed line of a blocked area is removed a small shot of trapped lubricant will usually surge out of this outlet as the inlet pressure on the divider valve drops. If testing in Step 2 indicates a blockage in the primary divider valve, this divider valve must be replaced.

3. Testing accomplished in Step 2 has indicated the blockage is downstream of the primary divider valve. Reinstall the feed line into the primary valve and proceed to downstream secondary divider valve and repeat step 2 on the secondary valve. If lubricant can be discharged freely through the secondary valve, the blockage is in the supply line between the primary and the secondary valve.

4. If high pressure exists on one of the secondary outlets, blockage has been located. Look for crushed line, tight bearing, improperly drilled fittings and/or lube inlet port. Correct as necessary.

Contamination

If dirt, foreign material or any other form of contamination is found as the source of the blockage, clearing the blockage will only temporarily solve contamination blockage problems. The **source of the contamination must be eliminated for satisfactory service.** The reservoir must be inspected and cleaned if necessary. The reservoir filling method should be reviewed to eliminate any chance of foreign material entering the reservoir during filling. All lubricating systems require filtered lubricant.

Grease Separation Blockage

If a hard wax or soap like material is found in the valve outlets, grease separation is occurring. This means that the oil is being squeezed from the grease at normal system operating pressure and the grease thickener is being deposited in the divider valve. Cleaning the divider valve will usually result in only temporarily solving the problem. Consult your lubricant supplier for recommendations on alternate lubricants and your local Lincoln Distributor to verify compatibility with centralized lubricating systems

TROUBLE SHOOTING GUIDE:

SYMPTOM	PROBABLE CAUSE	SOLUTION
1. Pump will not operate.	Not receiving voltage.	Check fuses, timer and electrical supply. Check the electrical supply to the pump. If the pump receives no current, trace to the electrical source and repair.
	Blocked pump cam.	Replace the pump motor if no blockage is identified.
2. The pump motor is running but there is no grease being discharged.	Air pocket at pump element inlet.	Disconnect the main delivery hose from the pump outlet. Run the pump until solid grease (no bubbles) flows from the outlet. If solid grease does not discharge after 20 minutes of operation, the pump inlet is blocked with a contaminant. **NOTE:** Depending on operating temperatures and types of grease, it may require 10 minutes to achieve full volume at the outlet.
	Blocked Pump inlet.	Remove the pump element from the pump body and inspect the suction inlet port for foreign particles. Remove any particles found. Reassemble the pump and element and cycle the pump. If the pump element does not discharge grease, replace the pump element.
3. Pump was operated with an empty reservoir.	No grease	Fill the reservoir to the "max" level and press the manual reset button. Disconnect the main delivery hose from the pump and watch grease flow until solid grease (no air bubbles) is discharged. Reconnect the main delivery hose to the pump outlet.
4. Grease is discharged at the relief valve.	Blockage in the metering valves, hose, tube or connected component.	Switch the pump on and loosen each outlet in the primary valve one at a time. The blocked outlet will start discharging grease and the indicator pin will index. Retighten all of the outlets on the primary valve. Trace the hose that discharged grease to its secondary valve. Repeat the process of loosening each outlet one at a time until the blocked feed line is detected. Retighten all outlets. Repair the component blockage if found. If a metering valve is creating the blockage, replace the metering valve.
5. Indicator pin on the primary valve does not move.	Refer to #4.	Refer to #4.
6. Lube point not receiving grease.	Hose or tubing is cut or has chaffed through.	Replace the complete hose or tube. Or: If Tube is broken, cut tube at break and repair using tube union (part number 244058). If Hose is broken, cut ends at the break and install new reusable hose ends (part number 246002) and screw into a 1/8" NPT female connector (part number 67063).

Off-Season Maintenance Procedure for Lincoln Quicklub Automatic Lubrication System-203 Style Pumps

Most farm machinery is purchased for specific needs and is only used at certain times of the year. Machinery equipped with Lincoln 203 Style Automatic Lubrication Systems most commonly sit idle for many months of the year.

In the past several months, during machinery start up, we received a few calls regarding lube system start up issues. Our research of the reported issues determined that most were related to the grease being used.

Greases react in different manners to various pressures and temperatures they are exposed to. Some grease's tend to separate over time due to inactivity. We recommend that you look to your grease supplier for a recommendation of a grease that is less likely to separate under your specific conditions.

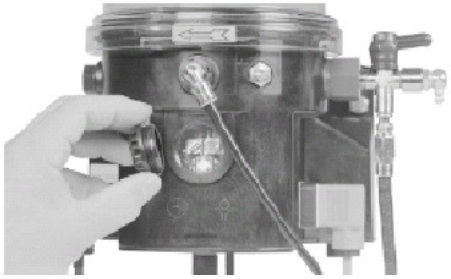
Grease "pump-ability" and "flow-ability" are key factors in making sure the Lincoln Automatic Lubrication system works as expected. We have found that after startup of the equipment and the lube system, and after the lube system is cycling periodically, we receive very few reports of system issues. In an effort to prevent issues during the next season start-up, we have developed the following "Off Season Maintenance Procedure" that we feel will better insure the results that you expect the next time you use your equipment.

PLEASE NOTE:

- **You must perform this procedure on a monthly basis to prevent system issues during the next usage.**
- **Leave only enough grease in the pump to perform Step #1. DO NOT FILL THE RESERVOIR AFTER THE LAST USAGE OF THE YEAR.**

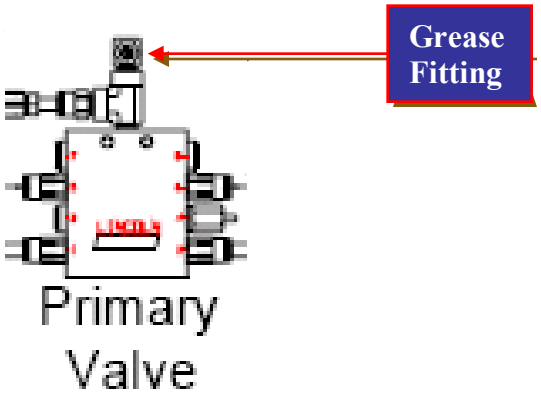
Off Season Maintenance Procedure

1. Turn the machinery ignition switch on and manually cycle the lubrication system by depressing the "manual lube" button located directly under the red and blue rotary timer switches on the front of the pump housing under the timer access cover. Depressing the button for 2 seconds will initiate a manual lube event. Cycle the system at least two more times to insure the grease is cycled through the primary valve.



Remove cover to access the timer.

2. Using a Lincoln PowerLuber or a manual grease gun, cycle the primary valve (first valve from the pump element) via the grease fitting. Pump grease for 10 seconds with the PowerLuber or 10 strokes of a standard grease gun.



3. The last step would be to cycle each secondary valve, again using the PowerLuber or manual grease gun. You should refer to your owner's manual to determine the number and location of the secondary valves. Cycle each valve until fresh grease is seen at a visible grease point.